



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,624	02/13/2002	Yoshikazu Nakayama	57A 3216	7347
7590	01/21/2005		EXAMINER	
KODA & ANDROLIA 2029 Century Park East Suite 1430 Los Angeles, CA 90067-3024			JAGAN, MIRELLYS	
			ART UNIT	PAPER NUMBER
				2859

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

HJA

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/074,624	NAKAYAMA ET AL.	
	<b>Examiner</b> Mirellys Jagan	<b>Art Unit</b> 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 01 December 2004.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-6 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1 is/are rejected.
- 7) Claim(s) 2-6 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 13 February 2002 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 1-6 are objected to because of the following informalities:

In claims 1 and 2, it is not clear from what the element the tip end portion is protruding.

In claim 3, lines 2-3 are not clearly written, e.g., lines 2-3 should be changed to --an atomic force microscope (AFM) cantilever in which a protruding portion formed on a cantilever portion thereof is employed as said holder--.

Claims 3 and 4 appear to claim elements already claimed by the means-plus-function limitation in claim 2, i.e., claims 3 and 4 appear to be duplicating the elements already claimed in the means-plus-function limitation. Claims 3 and 4 should more clearly state that the ‘means’ of claim 2 comprise the elements as claimed in lines 4-8, respectively.

In claim 6, “heat emitting probe” should be changed to --heat emitting body-- in line 5. Furthermore, it is not clear what is forming the hole pattern claimed in line 6, i.e., the hole pattern is formed by the needle.

Claim 5 is objected to for being dependent on an objected base claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01.

In claim 1, the omitted elements are the cantilever portion with the electrode films (5, 6), i.e., the means for conducting electric current to the needle and wire; and the means for electrically connecting the tip of the needle to the electrode film, e.g., the wire 12 or the electrode film 5b. These elements are all essential elements for the operation of the heat-emitting probe since the probe will not heat up without means for conducting electric current through the needle and wires.

***Allowable Subject Matter***

4. Claim 1 would be allowable if rewritten or amended to overcome the objections and rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

5. Claims 2-6 would be allowable if rewritten or amended to overcome the objections set forth in this Office action.

6. The following is a statement of reasons for the indication of allowable subject matter:  
The prior art of record does not disclose or suggest the following in combination with the remaining limitations of the claims:

A heat emitting probe comprising a conductive carbon nanotube lead wire fastened to a heat-emitting body that is provided on a circumferential surface of a conductive carbon nanotube probe needle (see claim 1).

A heat emitting probe comprising a conductive carbon nanotube lead wire fastened to a heat-emitting body that is provided on a circumferential surface of a conductive carbon nanotube probe needle allowing the electric current to pass through both ends of the lead wire and needle (see claim 2).

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents and publications disclose a nanotube tip for an AFM:

U.S. Patent 6,703,615 to Nakayama et al  
U.S. Patent 6,735,046 to Nakayama et al  
U.S. Patent 6,636,050 to Nakayama et al  
U.S. Patent 6,777,693 to Nakayama et al  
U.S. Patent 6,787,769 to Nakayama et al  
U.S. Patent Application Publication 2003/0189351 to Nakayama et al  
U.S. Patent Application Publication 2004/0074288 to Shirakawabe et al  
U.S. Patent Application Publication 2002/0121897 to Mukasa et al  
Japanese Patent 2000321292 to Nakayama

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mirellys Jagan whose telephone number is 571-272-2247. The examiner can normally be reached on Monday-Friday from 11AM to 4PM.

Art Unit: 2859

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJ  
January 14, 2005



**Diego Gutierrez**  
**Supervisory Patent Examiner**  
**Technology Center 2800**